SP0005 / SP0008 / SP0016
5/8/16-Port
Fast Ethernet Switch

User's Guide

FCC Warning

This equipment has been tested and found to comply with the limits for Class A & Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this user's guide, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

CE Mark Warning

This device complies with requirements of EN50081-1 and EN50082-1 under the scope of EMC Directive EEC.

Trademarks

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1. Introduction

1.1. Product Overview

This SP0005/SP0008/SP0016 high performance Fast Ethernet switch provides five/eight/sixteen Fast Ethernet ports to segment network traffic, extend Fast Ethernet connection distance, and convert data packets between different transmission speeds. This Fast Ethernet Switch provides shielded RJ-45 ports both with 10Base-T and 100Base-TX Auto-negotiation capability and MDI/MDI-X auto crossover. All ports in this switch support Full-Duplex and Half-Duplex operation modes. The Fast Ethernet Switch is typically used to segment network traffic that can improve the network performance by increasing the total bandwidth as illustrated in Figure 1-1.

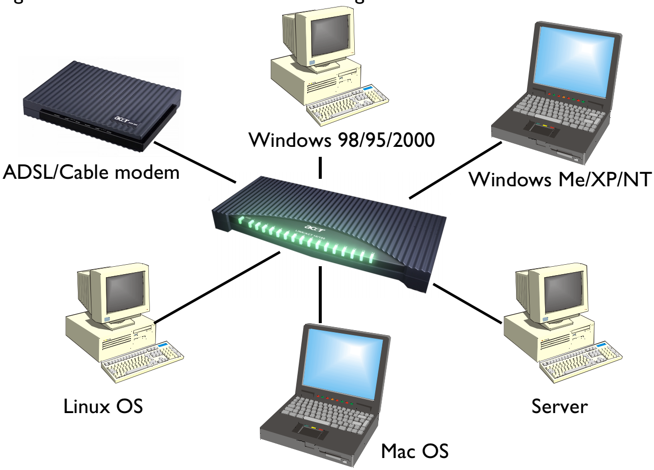


Figure 1-1

This Fast Ethernet Switch utilizes stored-and-forward switching architecture that filters and forwards data after the complete data packet is received and examined to be free of errors. With one set of status LEDs for each individual port, the switch operation status can be easily monitored. Their slim and compact design allows direct placing on the desktop or conveniently mounted on the wall or the side of a desk to accommodate cabling consideration.

1.2. Features & Specifications

1.2.1 Features

- Compliant with IEEE 802.3 10Base-T Ethernet and 802.3u 100Base-TX Fast Ethernet Standards.
- Provides 5/8/16 ports for 10Base-T/100Base-TX, standard RJ-45 connectors.
- All RJ-45 ports supports 10Base-T/100Base-TX and Full-Duplex/Half-Duplex Auto-negotiation function.
- Supports MDI/MDI-X auto crossover.
- Supports store-and-forward switching mechanism.
- Plug-and-Play
- Performs non-blocking full wire speed rate.
- Supports up to 4K/2K/8K (5/8/16 ports) MAC addresses table / hashing algorithm on address learning.
- Supports Aging function and 802.3x flow control for full Duplex and collision-based backpressure function for half duplex operation.
- 128K/128K/512K (5/8/16 ports) Bytes buffer memory.
- Automatic address learning, address aging and address migration.
- Simple and economical way to bridge 10Base-T network and 100Base-TX network.
- Front panel status LEDs
- Desktop size.
- Wall mountable.

1.2.2. Technical Specifications

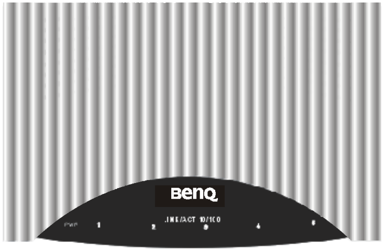
<table>
<tr><td>Ethernet Standards</td><td colspan="3">IEEE 802.3 10Base-T, 802.3u 100Base-TX</td></tr>
<tr><td rowspan="6">LED report</td><td rowspan="2">Power</td><td>Steady</td><td>Power On</td></tr>
<tr><td>Off</td><td>Power Off</td></tr>
<tr><td rowspan="2">100 M (Green)</td><td>Steady (LNK)</td><td>A valid network connection established</td></tr>
<tr><td>Flashing (ACT)</td><td>Transmitting or receiving data</td></tr>
<tr><td rowspan="2">10 M (Yellow)</td><td>Steady (LNK)</td><td>A valid network connection established</td></tr>
<tr><td>Flashing (ACT)</td><td>Transmitting or receiving data</td></tr>
<tr><td>Cable</td><td colspan="3">10Base-T: 2-pair UTP Cat. 3,4,5, up to 100m (328 ft)
100Base-TX: 2-pair UTP Cat. 5, up to 100m (328 ft)</td></tr>
<tr><td>Switching Method</td><td colspan="3">Store-and-forward</td></tr>
<tr><td>Forwarding Rate</td><td colspan="3">14,880pps for 10Mbps; 148,800pps for 100Mbps</td></tr>
</table>

1.2.3. Physical Specifications

AC Input	50-60Hz, External power adapter
Operating Temperature	0°C ~ 50°C (32°F ~ 122°F)
Storage Temperature	-20°C ~ 70°C (-4°F ~ 158°F)
Humidity	10% ~ 90% non-condensing
Emission Compliance	FCC part 15 Class B, CE Mark, VCCI Class B, C-TICK for SP0005 & SP0008 FCC Class A, CE Mark, VCCI Class A, C-TICK for SP0016
Safety	UL/CSA
Dimension	162mm x 103mm x 32mm (SP0005) 162mm x 103mm x 32mm (SP0008) 301mm x 125mm x 32mm (SP0016)
Net Weight	250g (SP0005); 250g (SP0008); 540g (SP0016)

1.3. Product outlook and terminology

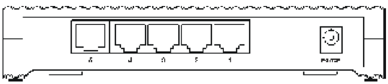
1.3.1. SP0005



Top View



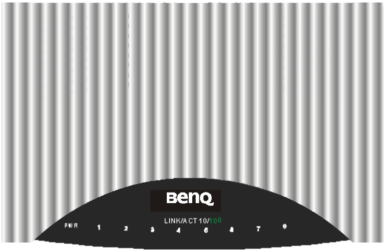
Front View



Rear View

WIDTH * DEPTH * HEIGHT = 162*103*32 mm

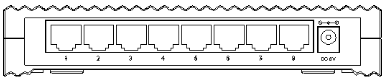
1.3.2. SP0008



Top View



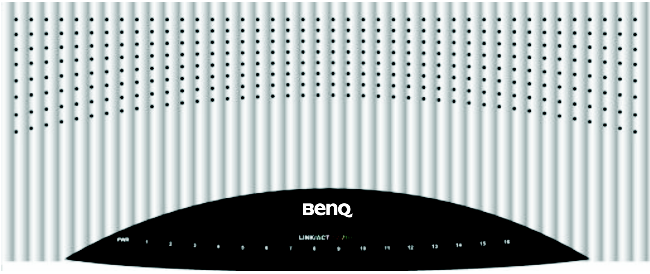
Front View



Rear View

WIDTH * DEPTH * HEIGHT = 162*103*32 mm

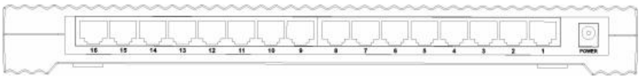
1.3.3. SP0016



Top View



Front View



Rear View

WIDTH * DEPTH * HEIGHT = 301*125*32 mm

1.3.4. Terminology

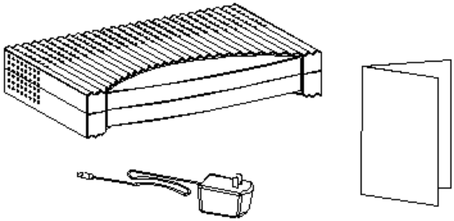
PWR:

This Green LED lights when the power adapter is mounted

LINK/ACT 10/100:

The Yellow LED lights when there is a valid 10-Base data linked on the port. And Green LED lights for 100-Base data linked. LED lights blinking when either 10-Base or 100-Base data is transmitted.

1.4. Package contents



The package should contain the following items:

SP0005/SP0008/SP0016 x 1
AC power adapter x 1
This User's Guide

IF any item is found missing or damaged, please contact your local Benq reseller for replacement.

2. Installation

2.1. Operating Environment

This switch must be installed and operated within the limits of specified operating temperature and humidity (see previous section under Specifications).

- Do not place objects on top of the unit.
- Do not obstruct any vents at the sides of the unit.
- Do not position the unit near any heating source such as heater, radiator, or direct exposure to sun.
- Prevent entering of water and moisture into the unit.
- If necessary, use dehumidifier to reduce humidity.
- Always avoid dust and dirt.
- Allow some space between the product and the surroundings to facilitate dissipation of heat generated inside the switch.

2.2. Connecting to network devices

The RJ-45 ports on the switch are designed as MDI/MDI-X auto crossover ports which allow using straight-through cables to connect any port on this switch to network device.

Connect one end of the network cable to the RJ-45 port on the rear panel, and then connect the other end of the network cable to the RJ-45 port on the network device. Follow the same procedure to connect all the RJ-45 ports of the switch. The UTP network cables must comply with EIA/TIA 568 specifications and Category 5 standard for 100Mbps data transmission and Category 3, 4, 5 for 10Mbps connection. Maximum length, using UTP cable, between the switch and connected device is 100 meters (328ft). Once the network cable is connected to both ends and the attached network device is powered on, the green LINK/ACT 10/100 LED should be lit (for 100-Base data linked by auto-negotiation).

2.3. Connecting the power

Connect the output end of the power adapter to the power connector on the rear panel of the unit. Connect the power adapter to the power outlet. The green Power LED on the front panel should be lit.

3. Trouble Shooting

The SP0005/SP0008/SP0016 can be easily monitored by its LED indicators. Please follow the troubleshooting steps below to solve any problem you may encounter during installation or implementation of the SP0005/SP0008/SP0016.

1. Power LED is not lit

Check if the power cord is properly connected to the external power adapter and the power outlet. Make sure the DC power jack is firmly plugged into the power socket of the switch.

2. 100M Link/Activity(Green) is not lit when connect to 100 Mbps device

- Check the power switch of the network device attached to the switch; make sure it is turned ON.
- Check the network cable; make sure it is properly connected to the switch and the network device.
- Check the network cable; make sure the UTP cables comply with EIA/TIA 568 and Category 5 specification.

Please perform the following tests

- Please check whether the RJ-45 cable is functional. Replace with another working cable and see whether the condition can be improved.
- Use another port on the SP0005/SP0008/SP0016. If a link can be established this way, the first port is faulty. Please contact your local Benq dealer for assistant.
- Make sure that all devices are connected to the network.
- Please ensure that the network adapter cards installed in the workstation or other devices to the switch are in well working condition.

[!] Contact your dealer if problem persists.

1. 绪论

1.1. 产品简介

SP0005/SP0008/SP0016 高性能快速以太网交换机具有 5/8/16 个快速以太网端口，可将数据在不同速度的网络之间进行交换并延长传输距离。每端口均为具有 MDI/MDI-X 自适应及 10Base-T/100Base-TX 自适应的标准 RJ-45 接口。且均可自适应全双工 / 半双工模式。主要用以增加网络带宽来提高性能，如图 1-1 所示。

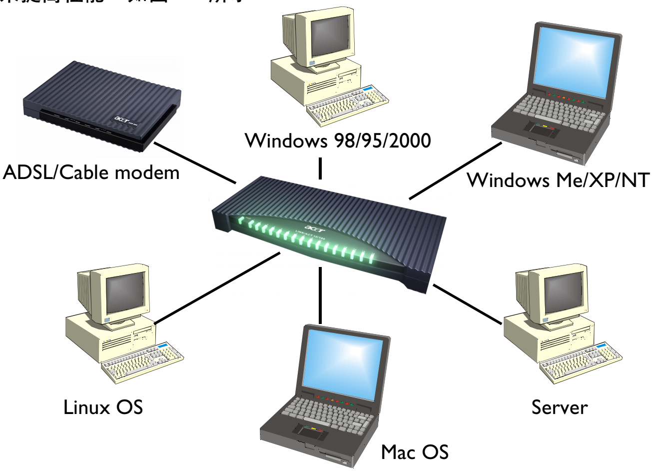


图 1-1

SP0005/SP0008/SP0016 采用存储—转发机制，可对数据包进行校验後，再进行过滤及转发，并且每个端口都具有独立 LED 指示灯用以监视工作状态。紧凑的设计使得设备可以方便的放在桌面或者挂置於墙上及桌侧以方便电缆连接。

1.2. 特性 & 规格

1.2.1 产品特性

- 遵从 IEEE 802.3 10Base-T 及 802.3u 100Base-TX 快速以太网标准。
- 具有 5/8/16 个 10Base-T/100Base-TX 标准 RJ-45 接口。
- 所有均支持 10Base-T/100Base-TX 及全双工 / 半双工自适应。
- 支持 MDI/MDI-X 自适应。
- 存储—转发机制。
- 即插即用。
- 无阻塞全线速转发。
- 具有最大 4K/2K/8K (5/8/16 ports) MAC 地址表 / 地址散列运算自学习功能。
- 支持 Aging 功能与 802.3x 全双工流控制及半双工背压流控制。
- 128K/128K/512K (5/8/16 ports) 缓存。
- 地址自学习，自释放及地址漫游功能。
- 10Base-T 及 100Base-TX 网络间简单经济的连接方式。
- 前面板状态指示灯。
- 同桌面大小。
- 可壁挂设计。

1.2.2. 技术规格

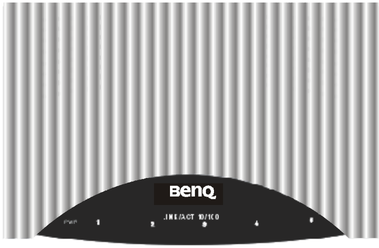
<table>
<tr><td>以太网标准</td><td colspan="3">IEEE 802.3 10Base-T, 802.3u 100Base-TX</td></tr>
<tr><td rowspan="5">LED 指示灯</td><td>设备</td><td colspan="2">电源指示</td></tr>
<tr><td rowspan="2">100 M
(绿色)</td><td>亮灯</td><td>连接状态</td></tr>
<tr><td>闪讖</td><td>工作状态</td></tr>
<tr><td rowspan="2">10 M
(黄色)</td><td>亮灯</td><td>连接状态</td></tr>
<tr><td>闪讖</td><td>工作状态</td></tr>
<tr><td>电缆</td><td colspan="3">10Base-T: 2 对 3, 4, 5 类非屏蔽双绞线
100Base-TX: 2 对 5 类双绞线</td></tr>
<tr><td>交换机制</td><td colspan="3">存储—转发</td></tr>
<tr><td>转发速率</td><td colspan="3">14,880pps for 10Mbps; 148,800pps for 100Mbps</td></tr>
</table>

1.2.3. 外观规格

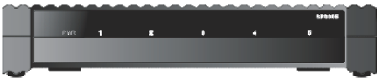
电源	50-60Hz 外置电源适配器
工作温度	0°C ~ 50°C (32°F ~122°F)
存放温度	-20°C~ 70°C (-4°F ~ 158°F)
工作湿度	10% ~ 90% 非冷凝
辐射标准	FCC part 15 Class B, CE Mark, VCCI Class B, C-TICK for SP0005 & SP0008 FCC Class A, CE Mark, VCCI Class A, C-TICK for SP0016
安全标准	UL/CSA
外部尺寸	162mm x 103mm x 32mm (SP0005) 162mm x 103mm x 32mm (SP0008) 301mm x 125mm x 32mm (SP0016)
净重	250g (SP0005); 250g (SP0008); 540g (SP0016)

1.3. 产品外观及术语

1.3.1. SP0005



上视图



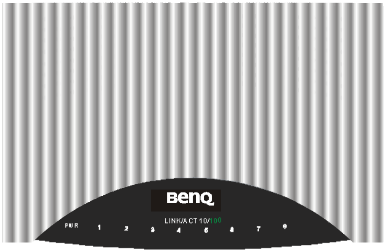
前视图



後视图

长 * 宽 * 高 = 162*103*32 mm

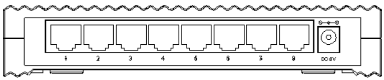
1.3.2. SP0008



上视图



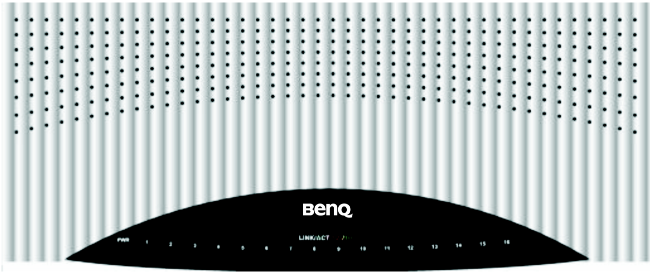
前视图



後视图

长 * 宽 * 高 = 162*103*32 mm

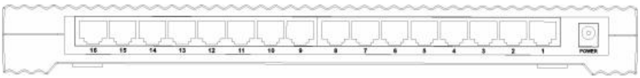
1.3.3. SP0016



上视图



前视图



後视图

长 * 宽 * 高 = 301*125*32 mm

1.3.4. 术语

PWR:

接通电源後，绿灯点亮。

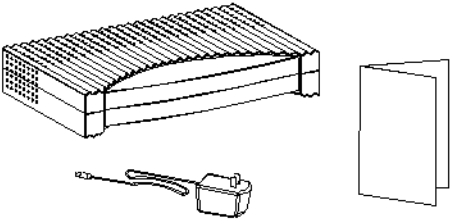
连接 / 工作 **10/100:**

连接 10 兆网络时，黄灯点亮。

连接 100 兆网络时，绿灯点亮。

数据传输时，黄灯或绿灯均会闪蠘。

1.4. 产品包装



包装中应包括如下部件：

SP0005/SP0008/SP0016 x 1
交流电源适配器 x 1
本用户手册

如有任何部件缺失或损坏，请与本地 Benq 经销商联系调换。

2. 安装

2.1. 工作环境

本设备必须在指定的工作温度及湿度中安装及工作〈详见前述章节〉。

• 请勿将任何物品置於设备顶部。
• 请勿阻塞设备任何一侧的通风口。
• 请勿将设备放置於任何热源附近。
• 放置水或者湿气进入设备内部，如有必要请用除湿器除去湿气。
• 避免灰尘沾染。
• 在设备与环境之间留出空间，以散发设备内部产生的热量。

2.2. 网络连接

本交换机上的 RJ-45 端口具有 MDI/MDI-X 自适应功能，可使用直连网线与网络相连。使用 RJ-45 线缆一端与本设备背板上的 RJ-45 端口相连，另外一端连接至网络接口上。同样将其他端口一一连接好，所有的双绞线必须遵从 EIA/TIA 568 规范以及各类双绞线传输距离限制。当缆线连接至网络端口且电源打开後，绿色的连接 / 工作 10/100 灯会点亮 (100-Base 自适应)。

2.3. 连接电源

将电源适配器输出端连接至背板电源接口，电源适配器连接至电源插座，绿色电源指示灯将会点亮。

3. 故障排除

本设备可由面板指示灯观察系统状态。请按如下步骤排除安装交换机过程中所遇到的故障。

1. 电源灯不亮

检查电源线是否正确连接至电源插座，电源输出端口是否正确插入交换机背面的电源接口。

2. 100M 连接 / 工作 (绿) 接入 100M 网络时不亮

- 检查电源是否正确连接及电源是否打开。
- 检查网络线缆是否正确连接交换机和网络。
- 检查双绞线是否遵从 EIA/TIA 568 和 5 类线规范。

请执行以下检查步骤：

- 使用其他可以正常使用的 RJ-45 线缆代替现有线缆，以确认线缆没有故障。
- 连接至设备上其他端口，如果可以正常工作则可以确定此端口已失效，请联络当地 Benq 经销商。
- 确认所有设备均连接至网络。
- 确认所有连接至交换机的设备上，网络卡安装正确并正常工作。

[!] 如故障依旧请联系您的经销商。

Benq Network Products Limited Warranty

A. LIMITED WARRANTY

Benq Corporation ("Benq") warrants the Benq network product you have purchased from Benq or from an Benq Authorized Reseller to be free from defects in materials and workmanship under normal use during the warranty period of **one year from the date of purchase**. Your original **purchase invoice (sales receipt)**, showing the date of purchase of the network product, is your proof of the date of purchase. This warranty extends only to you, the original Purchaser. It is not transferable to anyone who subsequently purchases, leases or otherwise obtains the network product from you.

During the warranty period, Benq will, at no additional charge, repair or replace defective parts with serviceable used parts that are equivalent to new parts in performance. All exchanged parts and network product replaced under this warranty will become the property of Benq. There will be no charge for labor or parts during the one-year warranty period from the date of purchase.

To ensure timely response to a service request, **please complete and detach the Benq Warranty Registration Card, then return it together with a copy of your sales receipt to Benq within ten (10) calendar days after date of purchase by end user**.

In the event the network product exhibits a defect in material or workmanship within the warranty period, Benq will provide the warranty services applicable to the network product as defined below.

B. WARRANTY LIMITATION; EXCLUSIONS; EXCLUSIVE REMEDIES

The Limited Warranty does not extend to any network product not purchased from Benq or from an Benq Authorized Reseller. This limited warranty also does not extend to any network product that has been damaged or rendered defective (a) as a result of use of the network product other than for its normal intended use, failure to use the network product in accordance with the User's Manual which accompanies the network product or other misuse, abuse or negligence to the network product; (b) by the use of parts not manufactured or sold by Benq; (c) by modification of the network product; (d) as a result of service by anyone other than Benq or an

Benq Authorized Service Provider; (e) improper transportation or packing when returning the network product to Benq or an authorized Service Provider; or (f) unusual physical or electrical stress or interference, failure or fluctuation of electrical power, lightening, static electricity, fire or acts of God.

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Some states do no allow the exclusion or limitation of incidental or consequential damages for consumer products, and some states do not allow limitations on how long an implied warranty lasts. In such cases, the exclusions or limitations of this Limited Warranty may not apply to you.

This Limited Warranty gives you specific legal rights. You may also have other rights that vary from state to state. You are advised to consult applicable state laws for a full determination of your rights.

C. TECHNICAL SUPPORT

Please visit our support website http://www.benq.com.tw, the most frequently asked questions are answered here.

All prices, products, terms & conditions are subject to change without notice.